

Title of the Invention

Receptacle Connector Assembly for IC Card and IC Card Connector

Cross-References to Related Applications

Not Applicable

5 **Statement Regarding Federally Sponsored Research or Development**

Not Applicable

Description**Field of Invention**

The invention relates to a receptacle connector assembly for an IC card, particularly to one meeting the insulation specifications prescribed in the PCMCIA protocols.

Background

In the conventional receptacle assemblies for an IC card, such as those disclosed in U.S. Patent Nos. 5,807,137 and 5,896,274, and JP11-260488, adhesive is employed to secure a shielding member for shielding noises to a header housing of the receptacle connector assembly, where the shielding member covers a portion of terminals; a metal shield of the IC card then covers a portion of the shielding member.

Though such a design helps the connector shield from noises, the shielding member may not be properly insulated from the metal shield.

In addition, the lacking of protective measure between the shielding member and the terminals results in easy penetration of dust through the gap formed between the shielding member and metal shield and into the header housing or terminals, thereby causing short circuits.

25 Furthermore, it is relatively inconvenient to remove the shielding member

from the header housing in case components are damaged during assembly.

Summary of Invention

It is a primary objective of this invention to provide a receptacle connector assembly that meets the specifications provided in Vol. 3, Section 4.1 of the
5 PCMCIA protocols.

It is a further objective of this invention to provide an IC card connector having such a receptacle connector assembly.

It is another objective of this invention to provide an IC card connector allowing easy replacement of the shielding member.

10 It is yet another objective of this invention to provide a receptacle connector assembly capable of preventing dust from tainting the terminals.

To achieve the above objectives, this invention discloses a receptacle connector assembly, including: a connector housing having a top surface, a bottom surface, and a peripheral wall located between the top surface and
15 bottom surface; a plurality of terminals mounted in the connector housing and extending from the peripheral wall; a shielding member removably attached to the top surface of the connector housing and having a portion extending over the terminals; and a supporting member removably attached to the connector housing and covering the portion of the shielding member extending over the
20 terminals.

This invention further discloses an IC card connector having such a receptacle connector assembly.

Brief Description of the Drawings

These and other modifications and advantages will become even more apparent from the following detailed description of a preferred embodiment of
25 the invention and from the drawings in which:

Fig. 1 illustrates an exploded, perspective view of a receptacle connector assembly for an IC card of this invention.

Fig. 2 is a side cross-sectional view of the receptacle connector assembly.

for an IC card in Fig. 1.

Fig. 3 is a cross-sectional view illustrating an IC card connector assembled from the receptacle connector assembly as shown in Figs. 1 and 2.

Detailed Description of the Invention (Preferred Embodiments)

5 Fig. 1 illustrates an exploded, perspective view of a receptacle connector assembly 10 for an IC card of this invention.

The receptacle connector assembly 10 for an IC card includes: a header housing 20, a plurality of terminals 30, a shielding member 40, and a supporting member 50.

10 The header housing 20 includes a top surface 21, a bottom surface 22, and a peripheral wall 23 located between the top surface 21 and bottom surface 22.

The plurality of terminals 30 are mounted in the housing 20 and extend from the peripheral wall 23.

15 The shielding member 40 includes a plurality of positioning pins 41, and the housing 20 is formed with a plurality of openings 24 at locations corresponding to the positioning pins 41 for insertion of the positioning pins 41. As such, the shielding member 40 may be attached to the top surface 21 of the housing 20 to allow a portion A thereof extending over the terminals 30, as shown in Fig. 2.

20 The receptacle assembly 10 may include a locking mechanism for removably locking the shielding member 40 to the housing 20.

According to a preferred embodiment of this invention, the locking mechanism includes: a plurality of resilient tabs 42 formed on the shielding member 40; and a plurality of protrusions 25 formed on the housing 20 at locations corresponding to the resilient tabs 42. As such, the protrusions 25 may be inserted under the resilient tabs 42 so as to removably lock the shielding member 40 to the housing 20.

The shielding member 40 is preferably made of brass sheets by stamping.

The supporting member 50 is removably attached to the housing 20 and covers the portion A of the shielding member 40 extending over the terminals

30. The receptacle connector assembly 10 includes a mounting mechanism for removably mounting the supporting member 50 to the housing 20.

According to a preferred embodiment of this invention, the mounting mechanism includes: a pair of posts 26 symmetrically arranged on the top surface 21 at two opposing ends of the housing 20; and a pair of holes 51 formed on the supporting member 50 at locations corresponding to the posts 26 for insertion of the posts 26. The tops of the posts 26 may be pressed and deformed by a jig to serve as rivets for securing the supporting member 50 on the housing 20 when necessary.

10 According to another embodiment of this invention as shown, the mounting mechanism may include: a recess 27 formed at each of two opposing ends of the top surface 21 of the housing 20 for press-fitting with the opposing ends of the supporting member 50. The recesses 27 and posts 26-holes 51 may be adopted selectively or simultaneously as required to ensure secured attachment result.

15 To assemble the header housing 20 into an IC card connector 100, as shown in Fig. 3, a metal shield 60 covering an IC card substrate is mounted over an outer side of a portion of the top surface 21 of the header housing 20. The portion A of the shielding member 40 that extends over the terminals 30 is extended between a portion between the metal shield 60 and the terminals 30. The supporting member 50 then extends between the metal shield 60 and the shielding member 40.

20 To ensure that the assembled IC card connector 100 can meet the specifications provided in Vol. 3, Section 4.1 of the PCMCIA protocols, the supporting member 50 provided between the metal shield 60 and shielding member 40 is preferably made of an insulating material, such as plastics or Liquid Crystal Polymer (LCP) by injection molding.

25 Because the shielding member 40 and supporting member 50 in this invention can be mounted to the header housing 20 in a removable manner, the shielding member 40 and supporting member 50 may be easily removed and replaced with new components when such components are damaged during

assembly.

In addition, the supporting member 50 can also prevent penetration of dust into the gap formed between the shielding member 40 and metal shield 60 thereby eliminating the occurrence of short circuits.

5 This invention is related to a novel creation that makes a breakthrough in the art. Aforementioned explanations; however, are directed to the description of preferred embodiments according to this invention. Since this invention is not limited to the specific details described in connection with the preferred 10 embodiments, changes and implementations to certain features of the preferred embodiments without altering the overall basic function of the invention are contemplated within the scope of the appended claims.

Listing of Nomenclatures

- | | |
|----|---------------------------------|
| A | portion |
| 10 | receptacle assembly for IC card |
| 15 | header housing |
| 21 | top surface |
| 22 | bottom surface |
| 23 | peripheral wall |
| 24 | openings |
| 20 | 25 protrusions |
| 26 | posts |
| 27 | recess |
| 30 | terminals |
| 40 | shielding member |
| 25 | 41 positioning pins |
| 42 | resilient tabs |

50 supporting member

51 holes

60 metal shield

100 IC card connector